

CLAIMS

1. A radio communication system comprising a reference station which transmits an azimuth designation signal having directivity toward
5 a predetermined reference azimuth, and a plurality of terminal stations which can receive said azimuth designation signal transmitted from said reference station, wherein

a target terminal station, included in said plurality of terminal stations, comprises receiving means which receives the azimuth
10 designation signal transmitted from the reference station, arrival direction obtaining means which obtains an arrival direction of the azimuth designation signal received by said receiving means, azimuth designation signal generating means which generates a new azimuth designation signal having directivity in the direction opposite to the
15 arrival direction of the azimuth designation signal obtained by said arrival direction obtaining means, and transmitting means which allows the azimuth designation signal generated by said azimuth designation signal generating means to have directivity in a direction designated by the azimuth designation signal and then transmits the signal.

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2. A radio communication system according to claim 1, wherein the receiving means is constructed so as to receive the azimuth designation signals transmitted from the reference station and another terminal station.

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3. A radio communication system according to claim 1, wherein

the target terminal station comprises reference azimuth specifying means which detects a direction of the directivity of the azimuth designation signal generated by the azimuth designation signal generating means as a reference azimuth.

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4. A radio communication system according to claim 1, wherein the reference azimuth is set in the longitudinal direction of a service area of the radio communication system.

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5. A radio communication system according to claim 1, wherein the reference station is installed along a road and the reference azimuth is set in a direction along said road.

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6. A radio communication system according to claim 1, further comprising means which detects a reference plane to be referred when a communicating direction is determined.

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7. A radio communication system according to claim 1, wherein each of the reference station and the plurality of terminal stations adds priority information to the azimuth designation signal and then transmits the resultant signal, and

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the azimuth designation signal generating means weights the plurality of received azimuth designation signals in accordance with the priority information to determine a transmitting direction of the azimuth designation signal.

8. A radio communication system according to claim 1, further comprising priority adding means which adds priority to the azimuth designation signal, the priority decreasing each time transmission is performed.

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9. A radio communication system according to claim 1, wherein the terminal station comprises averaging means which averages the arrival directions obtained by the arrival direction obtaining means, and

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the azimuth designation signal generating means generates an azimuth designation signal having directivity in the direction opposite to the averaged arrival direction.

10. A radio communication system according to claim 1, wherein
15 the terminal station comprises means which extracts an electric power from the azimuth designation signal.

11. A radio communication system according to claim 1, wherein
20 the terminal station comprises means which superimposes an electric power on the azimuth designation signal.

12. A radio communication system according to claim 1,
comprising a charging management unit comprising a management
table which holds communicating situations of the plurality of terminal
25 stations, and a charge determining section which determines a charge
for each terminal station with reference to said management table in

accordance with the communicating situation of the corresponding terminal station.

13. An azimuth determining method for determining an azimuth
5 in a terminal station, comprising the steps of: in a reference station,
transmitting an azimuth designation signal so as to have directivity
toward a predetermined reference azimuth; and in said terminal station,
receiving said azimuth designation signal, obtaining an arrival direction
of the azimuth designation signal, generating a new azimuth
10 designation signal having directivity in the direction opposite to said
obtained arrival direction, transmitting said new generated azimuth
designation signal, specifying a reference azimuth on the basis of the
arrival directions of the azimuth designation signals transmitted from
the reference station and the terminal station, and determining an
15 azimuth on the basis of the specified reference azimuth.

14. A mobile terminal unit comprising: receiving means which
receives an azimuth designation signal, which is transmitted from a
reference station so as to have directivity in a previously set reference
20 azimuth; arrival direction obtaining means which obtains an arrival
direction of said azimuth designation signal received by said receiving
means; azimuth designation signal generating means which generates
a new azimuth designation signal having directivity in the direction
opposite to the arrival direction of the azimuth designation signal;
25 reference azimuth specifying means which detects the direction of the
directivity of the new azimuth designation signal generated by said

azimuth designation signal generating means as a reference azimuth;
and transmitting means which transmits the azimuth designation signal
generated by the azimuth designation signal generating means so as to
have directivity in a direction designated by the azimuth designation
5 signal.

15. A mobile terminal unit according to claim 14, wherein the
receiving means receives an azimuth designation signal transmitted
from another mobile terminal unit, and the arrival direction obtaining
10 means obtains the arrival directions of the azimuth designation signal
transmitted from the reference station and the azimuth designation
signal transmitted from the other mobile terminal unit.